QUALITY CONTROL AND INSPECTION OF OIL PIPELINE BY NDT (CMR/8/004) F5

New

MODEL PROJECT

CORE FINANCING

YEAR	Experts		Group Activity	Equipment	Fellowships		Scientific Visits		Group Training	Sub-Contracts	Misc. Comp.	TOTAL
	m/d	US $	US $	US $	m/d	US $	m/d	US $	US $	US $	US $	US $
1997	2/10	30,800	0	129,000	2/14	7,770	0/0	0	0	0	0	167,570
1998	1/27	26,505	0	75,000	9/21	32,010	0/0	0	0	0	0	133,515
1999	2/0	29,400	0	160,000	12/0	41,400	0/0	0	0	0	0	230,800

FOOTNOTE a/ FINANCING

YEAR	Experts		Group Activity	Equipment	Fellowships		Scientific Visits		Group Training	Sub-Contracts	Misc. Comp.	TOTAL
	m/d	US $	US $	US $	m/d	US $	m/d	US $	US $	US $	US $	US $
1997	2/0	27,900	0	120,000	0/0	0	1/0	9,600	0	0	0	157,500
1998	1/0	14,700	0	0	0/0	0	1/0	10,200	0	0	0	24,900

First Year Approved: 1997

OBJECTIVES: The overall development goal is to establish the capability to perform non-destructive tests (NDT) for quality control in metallurgy and construction. Specifically, the project aims to establish an NDT centre that can compete for a large share of the advanced testing needed during the construction of the Chad-Cameroon pipeline.

BACKGROUND: Cameroon is endowed with natural resources which could be exploited for national development, particularly in the industrial and infrastructural sectors. A world renowned consortium of oil companies, in association with the National Hydrocarbons Corporation (SNH), is working on a project to construct a pipeline to transport oil from Doba in Chad to the coastal region of Kribi in North Cameroon, with an investment of more than US $2 billion. This major project, involving more than 1000 km of pipeline, requires the application of advanced non-destructive testing (NDT) techniques for the quality control of pipes, welds, fittings and components such as pumps and valves. The techniques predominantly used are X-ray and gamma ray radiography, but the national capability for the industrial application of such radiation techniques is extremely limited in Cameroon. This has severely restricted the participation of the Hydrocarbon Company (HYDRAC), Douala, in this important aspect of the project. The petrochemical industry is one of the key areas where nuclear applications in NDT can play a significant role and where the Agency could significantly contribute. Execution of this long pipeline project with the related large investment offers a unique opportunity for launching an NDT project. Acquisition of national capability in NDT can bring about multiple benefits to Cameroon. Firstly, it would enable HYDRAC to participate in the pipeline inspection activities which would be of considerable economic benefit. This can later support an in-service inspection (ISI) programme, which in itself is an important function, not only for checking and maintaining the pipeline but also for ensuring the safety and protection of the environment. The NDT techniques could be further extended by rendering NDT services to other sectors of the national economy such as railways, civil structures, and power plants. Recognizing the importance of this topic, the Agency established a Reserve Fund Project in September 1995, assisting its formulation through an expert mission. On the basis of the recommendations of this mission, the Agency has been assisting HYDRAC in designing the NDT laboratory and in a full scale mock-up of the pipeline joints for further training of staff. Responsibility for detailed design and construction of the NDT laboratory will rest with the national counterpart. This new project is expected to consolidate the work already started in a more focused way to achieve the

ultimative objective of establishing national capability in NDT in the larger context. The project has a clear-cut mission and quantifiable performance indicators with considerable national government commitment and contribution.

PROJECT PLAN: A pre-project mission recommended that the project's first activity consist of upgrading the NDT Laboratory at HYDRAC, Douala, so that initial training can take place there. NDT equipment needed for the first phase of training should be in place. Also, the design requirements for NDT of the pipeline should be available. The project is planned for a duration of three years. To begin with efforts will be concentrated on completing construction of the NDT laboratory and the pipeline mock-up with necessary training equipment. Expert services, training courses, fellowships and scientific visits will be organized to a time schedule to be mutually worked out between the Agency and the national counterpart. Training will cover all techniques of NDT, starting with radiography level 1. It will then be extended to surface methods (visual), liquid dye penetrant, magnetic particle and ultrasonic testing techniques, all initially at level 1 organized at Douala. It is expected, by the fourth quarter of 1997, that the first qualification examination and certification of the NDT operators will be completed. This will precede further certification of the NDT team through main construction contractors of the pipeline. The second phase of the project will aim to build up qualified NDT personnel, necessary equipment and an infrastructure for actual inspection and quality control of the pipeline. This project is proposed to be executed through a combination of contribution from Technical Co-operation Fund (TCF) for the first part and as footnote a/ for the second part. In this respect, potential donors will be requested to contribute equipment (pipe crawlers and accessories) and consultant services with a view to ensuring proper management/participation in the NDT contract of the pipeline and in the certification process.

NATIONAL COMMITMENT: (i) Design and execution of the NDT laboratory, including the pipeline mock-up with the assistance of IAEA expert. (ii) Funding and procurement of NDT equipment required for the initial phase of training. (iii) Compilation of QC requirements for NDT to meet the design intent. (iv) Conclusion of a preliminary agreement with all parties concerned for the participation of HYDRAC NDT lab in QA/QC activities of the pipeline project.

AGENCY INPUT: The Agency will provide expert services and training to assist in establishing the quality management capability at the national level through application of NDT techniques. This assistance includes setting up the NDT laboratory, supplying certain NDT equipment and facilities for inspection, like crawlers and mobile laboratory.

PROJECT IMPACT: The initial impact of the project will be felt, in the short term, by the participation of the National Hydrocarbon Company in providing NDT services to the oil pipeline project. The major impact will, however, be in the achievement of national capability in providing NDT services as a part of QC/QA, not only in the petrochemical industry but also in other sectors. This will benefit the national economy and raise quality awareness. The country will also indirectly benefit in terms of environmental safety.